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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/615,041

07/08/2003

Hiroyuki Otaki

CU-5982

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LADAS & PARRY LLP  
224 SOUTH MICHIGAN AVENUE  
SUITE 1600  
CHICAGO, IL 60604

EXAMINER

ANGEBRANNDT, MARTIN J

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

08/20/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/615,041	<b>Applicant(s)</b> OTAKI ET AL.	
	<b>Examiner</b> Martin J. Angebrannt	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 October 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3,5-8 and 10-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,5-8 and 10-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/9/07</u> .   | 6) <input type="checkbox"/> Other: _____                          |

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1. The application has been revived in response to the petition from the applicant filed 10/09/2008. This petition was granted 6/26/2008. Rejections of the previous office action, not repeated below are withdrawn based upon the arguments and the amendment to the claims. The certified translation of the priority documents have been received and also serve to obviate some rejections. Kuriyama et al. JP 07-014436 should have referred to JP 08-201786.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 26 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Coumalin” should read - - coumarin - - and “ketocoumalin” should read - -  
ketocoumarin - -

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 25-26 and 28-29 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Mishima et al. '770.

See compositions in table 1, using the five perfluoroacrylates listed therein with oligomeric binders which undergo further curing. These are mixed with other acrylates.

As the binder can be further cured, it is held to be an oligomer in the context of the claims.

7. Claims 25-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugawara et al. JP 05-273899.

Sugawara et al. JP 05-273899 see example 2, where the monomer having the formula 20 is used to improve the qualities of a volume hologram which was formed from a composition comprising PVCz, tribromophenol methacrylate, a benzophenone and a coumarin sensitizer. [0048]. Useful binders are disclosed including polyvinyl acetate and acrylic resins and copolymers of acrylic acid. [0008-0009].

It would have been obvious to modify the composition of example 2 by using other binders of copolymers or copolymer blends such as polyvinyl acetate-acrylic acid based upon the direction at [0008-0009].

The applicant argues that no monomer bounded by the claims is shown. The examiner points the applicant to formula II in the references and the chemical formula at [0050] of the reference.

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8. Claims 1,5,7,8,10-12 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwagi et al. JP 03-123715.

Kashiwagi et al. JP 03-123715 teaches the composition of example 2, in table 1, where a epoxy monomers DPEP, PRGE and HDEP (structures shown on page 7) are included with triphenylsulphonium hexafluorophosphate (identified on page, lower left column). The addition of resinous binders is disclosed. These include epoxy resins, acrylate resins, epoxy(meth)acrylate resins, urethane acrylates, polybutadiene acrylate and modified products (page 2, lower left column, first full paragraph) .

It would have been obvious to add a resinous binder to the composition of example 2 based upon the direction on page 2.

9. Claims 1,5-8 and 10-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otaki et al. '275.

Otaki et al. '275 teaches the composition comprising general formula 2, where R3 can be alkoxy. See examples A series which include zirconium (tetra)butoxide and the organic-inorganic hybrid as part of the binder and a free radically polymerizable composition of the photocurable component. (col 16-17). The use of monomers which have a small refractive index, such as fluorine based monomers, such as heptadecafluorodecyl methacrylate, octafluoropentyl methacrylate, 2-(perfluoro-3-methylbutyl) ethyl methacrylate, (perfluorodecyl) ethyl methacrylate, hexadecafluorononyloxy)1-1,2-epoxypropane (E-5844) or 1,4-bis(2',3'-epoxypropyl)perfluoro-n-butane. (12/34-62). Useful initiators for photopolymerization are disclosed 12/63-13/17). Useful sensitizing dyes are disclosed (13/18-40). The use of compounds having epoxy or oxetane rings are disclosed. (12/2-14). (meth)acrylate

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monomers are disclosed (11/34-12/2). The organometallic particles are described at 20/10-43.

It would have been obvious to modify the examples of Otaki et al. '275 by using a cationically curable composition including the low refractive index monomer 1,4-bis(2',3'-epoxypropyl)perfluoro-n-butane with a reasonable expectation of forming a composition useful in recording holograms based upon the direction at 12/34-62.

The translation does not antedate this reference.

10. Claims 1,5-8 and 10-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otaki et al. '275, in view of Sugawara et al. JP 05-273899.

It would have been obvious to modify the examples of Otaki et al. '275 by using a free radically curable monomers bounded by formula II of Sugawara et al. JP 05-273899 as a low refractive index monomer based upon the direction to fluorinated monomers at 12/34-62 of Otaki et al. '275.

The response above is relied upon here.

11. Claims 1,5-8 and 10-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkuma et al '210 and Otaki et al. '275

Ohkuma et al. '210 teach the use of composition containing both free radically polymerizable systems and cationically polymerizable systems. The composition include a free radical monomer, a cationically polymerizable moner, a free radical photoinitiator, a cationic polymerization photoinitiator,a sensitizing dye and a binder. (see example 3). Useful cationically curable monomers include, but are not limited to those containing a cyclic ether group (4/67). Useful diepoxides are disclosed (5/5 in

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particular) Useful radically polymerizable monomers including diacrylates and dimethacrylates (3/19-51).

It would have been obvious to one skilled in the art to modify the compositions of Ohkuma et al '210 by using the fluorinated epoxides disclosed by Otaki et al. '275 in place of the cationically curable monomers, with a reasonable expectation of forming a useful photopolymerizable system based upon the functionality of these epoxides and the similarity to the exemplified species in line 5 of column 5 of Okuma et al. '210.

The response above is relied upon here.

12. Claims 18-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkuma et al '210, in view of Sugawara et al. JP 05-273899.

It would have been obvious to one skilled in the art to modify the compositions of Ohkuma et al '210 by using the fluorinated acrylates disclosed by Sugawara et al. JP 05-273899 in place of the free radically curable monomers used in the examples with a reasonable expectation of forming a useful photopolymerizable system based upon the functionality of these monomers and their previous use to increase the diffraction efficiency of holograms by Sugawara et al. JP 05-273899.

The response above is relied upon here, noting that the claims erejected under this heading recite the (meth)acrylatereactive moieties, note the epoxies or oxiranes.

13. Claims 1,5-8 and 10-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkuma et al '210, in view of Kashiwagi et al. JP 03-123715

It would have been obvious to one skilled in the art to modify the compositions of Ohkuma et al '210 by using the fluorinated epoxy HDEP disclosed by Kashiwagi et al. JP 03-123715 in place of the cationically curable monomers used in the examples with a reasonable expectation of forming a useful photopolymerizable system based upon the functionality of these monomers.

14. Claims 18-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al. 06-019040, in view of Sugawara et al. JP 05-273899.

Maeda et al. JP 06-019040 teaches volume holograms stabilized by sol gel glass generation insitu during the hologram formation. The use of acrylates is exemplified in examples 2 (TMPTA).

It would have been obvious to one skilled in the art to modify the compositions of Maeda et al. JP 06-019040 by using the fluorinated acrylates disclosed by Sugawara et al. JP 05-273899 in place of the free radically curable monomers used in the examples with a reasonable expectation of forming a useful photopolymerizable system based upon the functionality of these monomers and their previous use to increase the diffraction efficiency of holograms by Sugawara et al. JP 05-273899.



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15. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b). Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

16. Claims 1,5-8 and 10-17 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-23 of US patent 7323275.

The claims of the patent clearly embrace embodiments bounded by the instant claims, based upon the disclosure of the use of fluorinated monomers, particularly 1,4-bis(2',3'-epoxypropyl)perfluoro-n-butane and their oxetanyl equivalents

1,4-bis(2',3'-epoxypropyl)perfluoro-n-butane is bounded by the formula of claims 1,5-8 and 10-17.

17. Claims 1-5 and 7-29 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-33 of US patent 7323275, in view of Sugawara et al. JP 05-273899.

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It would have been obvious to one skilled in the art to modify the claimed composition of copending Application No. 10/072201 by using the fluorinated acrylates or epoxides disclosed by Sugawara et al. JP 05-273899 or Otaki et al. JP 2002-323845 as the free radically curable or cationically curable monomers used in the examples with a reasonable expectation of forming a useful photopolymerizable system based upon the functionality of these monomers and their previous use in forming holograms by Sugawara et al. JP 05-273899.

The applicant argues that Sugawara does not teach compounds bounded by the monomer recitation. The examiner points the applicant to formula II and the compounds disclosed with respect to it. This reference addresses the issue of the acrylate/methacrylate monomers of claims 18-29. The epoxides and oxetanes are addressed above

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the

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advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebranntt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Martin J Angebranntt/  
Primary Examiner, Art Unit 1795

Martin J Angebranntt  
Primary Examiner  
Art Unit 1795

8/14/2008